

Amendments To the Claims

Claim 1 (Currently Amended): A method to induce homologous recombination of a nucleotide sequence in a recombination construct within a plant, comprising introducing a said recombination construct to the plant, and ~~introducing~~ expressing a transposase ~~to~~ within the plant, so as to induce homologous recombination in said recombination construct within said plant.

Claim 2 (Previously Presented): The method of claim 1, wherein the recombination construct comprises a maize Ds element and the transposase is of maize origin.

Claim 3 (Previously Presented): The method of claim 2, wherein the recombination construct further comprises direct repeats proximal to the Ds element.

Claim 4 (Previously Presented): The method of claim 2, wherein the plant in which recombination is induced is selected from the group consisting of: soybean; maize; sugar cane; beet; tobacco; wheat; barley; poppy; rape; sunflower; alfalfa; sorghum; rose; carnation; gerbera; carrot; tomato; lettuce; chicory; pepper; melon; Arabidopsis; and cabbage.

Claim 5 (Currently Amended): A method to construct a functional gene in plants, comprising introducing to the plant a maize recombination construct having overlapping sequences having homologous regions, which sequences, when homologously

recombined, result in a functional gene, and ~~introducing~~ expressing a transposase ~~to~~ within the plant, so as to induce recombination and construction of said functional gene.

Claim 6 (Currently Amended): The method of claim 5, wherein the functional gene is selected from the group consisting of: genes useful for disease resistance; genes useful for male sterility; genes useful for environmental condition tolerance; ~~and~~ genes useful for fruit ripening, oil or pigment biosynthesis, seed formation, and starch metabolism.

Claim 7 (Previously Presented): The method of claim 5, wherein the plant in which recombination is induced is selected from the group consisting of: soybean; maize; sugar cane; beet; tobacco; wheat; barley; poppy; rape; sunflower; alfalfa; sorghum; rose; carnation; gerbera; carrot; tomato; lettuce; chicory; pepper; melon; Arabidopsis; and cabbage.

Claim 8 (Currently Amended): A method to induce recombination in a plant comprising introducing to the plant a maize Ds element containing overlapping sequences having homologous regions to a fragments of a gene, wherein said fragments together contain the complete gene; and ~~introducing~~ expressing subsequently to the transformation of said Ds element a transposase within the plant, so as to induce homologous recombination and subsequent transcription of said complete gene.

Claim 9 (Currently Amended): The method of claim 8, wherein the gene is selected from the group consisting of: genes useful for disease resistance; genes useful for male sterility; genes

useful for environmental condition tolerance; ~~and~~ genes useful for fruit ripening, oil or pigment biosynthesis, seed formation, and starch metabolism.

Claim 10 (Original): A method of claim 9, wherein the plant in which recombination is induced is selected from the group consisting of: soybean; maize; sugar cane; beet; tobacco; wheat; barley; poppy; rape; sunflower; alfalfa; sorghum; rose; carnation; gerbera; carrot; tomato; lettuce; chicory; pepper; melon; Arabidopsis; and cabbage.

Claim 11 (Withdrawn): A method to alter a naturally-occurring sequence in plants, comprising introducing to the plant a maize recombination construct having direct repeats useful for subsequent removal of the recombination construct via homologous recombination.

Claim 12 (Withdrawn): A method of claim 11, wherein the plant in which the naturally-occurring sequence is disrupted is selected from the group consisting of: soybean; maize; sugar cane; beet; tobacco; wheat; barley; poppy; rape; sunflower; alfalfa; sorghum; rose; carnation; gerbera; carrot; tomato; lettuce; chicory; pepper; melon; Arabidopsis; and cabbage.

Claim 13 (Withdrawn): A method to construct a fusion protein sequence in plants, comprising introducing to the plant a maize recombination construct having overlapping sequences having homologous regions, which sequences, when homologously recombined, result in a fusion protein sequence, and making available to the plant a maize transposase, so as to cause recombination and construction of a fusion protein sequence.

Claim 14 (Withdrawn): A method of claim 2, wherein the fusion protein sequence is selected from the group consisting of: genes useful for disease resistance; genes useful for male sterility; genes useful for environmental condition tolerance; and genes useful for commercially-enhancing a biosynthetic pathway.

Claim 15 (Withdrawn): A method of claim 13, wherein the plant in which a fusion protein is constructed is selected from the group consisting of: soybean; maize; sugar cane;

Claim 16 (Withdrawn): A method to induce complementary nucleic acid sequence production in plants, comprising introducing to the plant a maize recombination construct having overlapping sequences having homologous regions, which sequences, when homologously recombined, result in complementary nucleic acid sequences, and making available to the plant a maize transposase, so as to cause recombination and production of said complementary nucleic acid sequences.

Claim 17 (Withdrawn): A method of claim 16, wherein the plant in which recombination and production of complementary nucleic acid sequences is induced is selected from the group consisting of: soybean; maize; sugar cane; beet; tobacco; wheat; barley; poppy; rape; sunflower; alfalfa; sorghum; rose; carnation; gerbera; carrot; tomato; lettuce; chicory; pepper; melon; Arabidopsis; and cabbage.

Claim 18 (Currently Amended): A recombination construct comprising a DNA molecule which can be induced to undergo homologous recombination in the presence of a maize

transposase, said recombination construct comprising direct repeat sequences proximal to a Ds element and an agronomically significant gene internal to the direct repeats.

Claim 19 (Currently Amended): ~~A composition of matter which~~ recombination construct comprising a DNA molecule which is part of a vector, wherein said DNA molecule can be induced to undergo homologous recombination upon introduction of a maize transposase, said ~~composition of matter~~ recombination construct comprising direct repeat sequences proximal to a Ds element and an agronomically significant gene internal to the direct repeats ~~as part of a vector~~.

Claim 20 (Currently Amended): ~~A composition of matter~~ recombination construct comprising a DNA molecule which can be induced to undergo homologous recombination ~~in a plant upon introduction~~ expression of a maize transposase ~~comprising~~ wherein said recombination construct comprises direct repeat sequences proximal to a Ds element and an agronomically significant gene internal to the direct repeats ~~in a plant transformed with said construct~~.

Claim 21 (Previously Presented): The recombination construct of claim 18, which further comprises a transposase gene under control of an inducible promoter.

Claim 22 (Canceled)

Claim 23 (Currently Amended): The ~~composition of matter~~ recombination construct of claim 20, wherein said direct repeat sequences are in the form of overlapping sequences having homologous regions.

Claim 24 (Original): The method of claim 3, wherein the recombination construct further comprises an agronomically significant gene internal to the direct repeats.

Claim 25 (Currently Amended): The method of claim 24, wherein the agronomically significant gene is selected from the group consisting of: genes useful for disease resistance; genes useful for male sterility; genes useful for environmental condition tolerance; ~~and~~ genes useful for fruit ripening, oil or pigment biosynthesis, seed formation, and starch metabolism.

Claim 26 (Previously Presented): The method of claim 3, wherein the recombination construct further comprises a transposase gene under the control of an inducible promoter.

Claim 27 (Previously Presented): The method of claim 3, wherein the transposase is Ac.

Claim 28 (Previously Presented): The method of claim 26, wherein the transposase is Ac.

Claim 29 (Currently Amended): The method of claim [4] 2, wherein the plant in which recombination is induced is maize.

Claim 30 (Currently Amended): The method of claim 2, wherein the maize Ds element ~~is further defined as containing~~ comprises overlapping sequences having homologous regions, which sequences, when homologously combined, results in a functional gene.

Claim 31 (Previously Presented): The method of claim 1, wherein the plant is a monocot.

Claim 32 (Previously Presented): The method of claim 1, wherein the plant is a dicot.

Claim 33 (Currently Amended): The method of claim 30, wherein the gene is selected from the group consisting of: genes useful for disease resistance; genes useful for male sterility; genes useful for environmental condition tolerance; ~~and~~ genes useful for fruit ripening, oil or pigment biosynthesis, seed formation, and starch metabolism.

Claim 34 (Previously Presented): The recombination construct of claim 21, wherein the transposase is Ac.

Claim 35 (Currently Amended): The recombination construct of claim 18, wherein the gene is selected from the group consisting of: genes useful for disease resistance;

genes useful for male sterility; genes useful for environmental condition tolerance; and
genes useful fruit ripening, oil or pigment biosynthesis, seed formation, and starch
metabolism.

Claim 36 (New): The method of claim 2 wherein the recombination construct further
comprises a transposon and direct repeats proximal to the transposon.